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Letter to the Editor

Electronic absorption spectra of some chloroxylenes

P. V. SHANBHAG, M. A. SHASHIDHAR AND
K. SURYANARAYANA RAO

Department of Physics, Karnatak University, Dharwar-580 003

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In continuation of our general programme of work on the electronic and vibrational spectra of poly-atomic molecules, particularly of substituted benzenes, the electronic absorption spectra of 1-chloro-2, 6-Xylene and 4-chloro-ortho-Xylene have been photographed on a Hilger Large Quartz Spectrograph using absorption columns of length varying from 10 to 150 cms and at temperatures ranging from 0°C to 15°C.

The spectra occurs in the region 2805-2550A. The bands are rather sharp and degraded to the red and the bands observed corresponds to the $A_{1g} \rightarrow B_{2u}$ transition of benzene. Of the two chloroxylenes studied, 1-chloro-2, 6-xylene belongs to C_{2v} symmetry while the other 4-chloro-*o*-xylene belongs to C_s symmetry. The spectra have been analysed with the analysed infrared data of these molecules (Shashidhar and Rao, 1970) also with the help of the corresponding analyses of three isomers of xylenes (Cooper and Sponer 1952; Cooper and Sastri, 1952; Rao and Sastri 1952).

The study of the temperature effect on the band systems has facilitated the choice of the band at 37180 and 36302 cm^{-1} in 1-chloro-2, 6-xylene and 4-chloro-ortho-xylene respectively as the 0, 0 band. Most of the observed bands in 1-chloro-2, 6-xylene could be accounted for in terms of 3 ground state fundamentals 375, 597, 768 cm^{-1}, 7 excited state fundamentals 327, 480, 639, 971, 1051, 1200, 1227 cm^{-1} and two difference frequencies 22 and 52 cm^{-1}, while the bands in 4-chloro-*o*-xylen could be interpreted in terms of two ground state frequencies 459, 611 cm^{-1} and seven excited state frequencies 429, 561, 703, 959, 1012, 1174, 1230 cm^{-1} accompanied with three difference frequencies 26, 38 and 60 cm^{-1}.

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